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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,113	11/28/2001	Hayden Clavie Cranford JR.	RAL920010003US2 (IRA-10-5)	1578
26675	7590	07/26/2005	EXAMINER	
DRIGGS, LUCAS, BRUBAKER & HOGG CO. L.P.A. 38500 CHARDON ROAD DEPT. IRA WILLOUGBY HILLS, OH 44094			GHULAMALI, QUTBUDDIN	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/996,113

Applicant(s)

CRANFORD ET AL.

Examiner

Qutub Ghulamali

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-21 is/are allowed.
- 6) ☒ Claim(s) 1-18, 22-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/17/05, 3/24/03, #128/c1
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: Pages 1 and 10, are required to be updated to reflect the current status of the related or copending US Application(s) cited therein.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 3 recites the limitation "the frequency of the reference clock" in line 3. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Objections***

5. Claims 1, 10 and 22 are objected to because of the following informalities:

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In the line 3, after “the transmitter comprising” insert a --:-- . Similarly, in line 7, after “half-rate system”, insert --the receiver further--. In the same line after “comprising”, insert a --:--.

In claim 10, line 2, after “comprising”, insert a --:--.

In claim 10, line 4, after “loop”, insert a --:--.

In claim 10, line 6, after “loop” insert a --:-- and delete “, and”.

In claim 10, line 8, after “half-rate system”, insert --the receiver further--. In the same line after “comprising”, insert a --:--.

In claim 22, line (d), after “rotating the” insert --sample--. In the same line replace “sampling” with --sample timing--.

Appropriate corrections are required.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 10, 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Wong et al (USP 4,584,695).

With reference to claims 1, 10, 22, Wong discloses a unified serial link system for transmitting digital data across wired media including a transmitter and a receiver, the transmitter

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comprising: a dual loop phase locked loop control circuit having a digital coarse loop for providing a PLL frequency control signal to an analog fine loop (col. 1, lines 45-54; col. 2, lines 8-51, 56-62),

the receiver including a phase locked loop control circuit and an over sampled half-rate system comprising a signal edge comparator, an early/late (leading/lagging) signal generator (driver) based on the output of the comparator, and a multi-step phase rotator (phase selector or commutator) controlled by the generated signal (col. 1, lines 36-67; col. 3, lines 4-19).

Regarding claims 2 and 11, Wong discloses the PLL in the transmitter is adapted to operate at full data rate and contains a four-stage (multiple stages) voltage controlled oscillator adapted to run at full bit frequency (col. 2, lines 62-67).

Regarding claims 3 and 12, Wong discloses a frequency reference clock that runs at one-fourth of the full data rate (25 percent  $\frac{1}{4}$ ), and a comparator that compares the frequency of the PLL with the frequency of the reference clock (col. 1, lines 61-67; col. 2, lines 1-7).

Regarding claims 4 and 13, Wong discloses coarse loop includes a reference generator, a voltage comparator, a PLL control logic, a digital to analog counter and a low pass filter (col. 4, lines 54-65).

Regarding claims 5 and 14, Wong discloses PLL in the transmitter and the receiver contains a pseudo random bit stream generator and checker for wrap mode (loop) self-testing (col. 5, lines 62-67; col. 6, lines 1-11).

Regarding claims 6 and 15, Wong discloses a bit edge correlation table for generating early (lead) and late (lagging) signals (col. 6, lines 1-29).

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Regarding claims 7 and 16, Wong discloses a phase rotator (commutator) control state machine is used to process the early and late signals from the correlation table to control the phase settings of the phase rotator (col. 3, lines 1-15, 47-67; col. 4, lines 1-4; col. 8, lines 48-66).

Regarding claims 8 and 17, Wong discloses receiver phase rotator is independent of the receiver PLL, and is employed for the purpose of making phase adjustments and clock recovery (col. 4, lines 1-19, 61-64).

Regarding claims 9 and 18, Wong discloses PPL controls a voltage controlled oscillator, and the output phases of the oscillator are fed to the phase rotator (col. 2, lines 8-23).

Regarding claim 23, Wong discloses the sample timing command is executed in response to a preponderance (occurrence) of early or late sampling (col. 3, lines 1-15)

***Allowable Subject Matter***

8. Claims 19-21 allowed.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patents:

Dally et al (US Pub 2004/0086002) discloses a data communication circuit with multi stage multiplexing.

Cao (US Pub. 2003/0053576) shows a linear phase detector for high speed clock recovery and data.

Black et al (US Patent 6,738,608) discloses a frequency timing control loop for communication system.

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Khoini-Poorfard (US Pub. 2002/0168026) shows a multi protocol modulator with phase rotation signal.

Hochschild (USP 4,538,282) discloses an integrated circuit PSK modem phase locked loop for transmitting and receiving signals.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014.

The examiner can normally be reached on Monday-Friday from 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QG.  
July 15, 2005.

A handwritten signature in black ink, appearing to read 'J. K. Patel', is written over a horizontal line.

JAY K. PATEL  
SUPERVISORY PATENT EXAMINER